Sludge Management Plan
CALTRANS, Cactus City Safety Roadside Rest Area (SRRA)
Sewage Pond Demolition Project

Board Order No: R7-2007-0051
RWQCB, Colorado River Basin Letter, March 25, 2008

Prepared for:
California Regional Water Quality Control Board
Colorado River Basin Region
464 W. 4th St, 6th Floor
San Bernadino, CA 92401-1400
September 19, 2011

Prepared by:
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1.0 PURPOSE

The California Department of Transportation (CALTRANS) owns and maintains the Cactus City Safety Roadside Rest Area (SRRA) located east of the City of Indo on Interstate 10 in Riverside County, California. A location map is attached in the as Figure 1. The wastewater from the SRRA is being treated by a two pond system. The first pond is a lined primary stabilization and evaporation pond. The second pond is for infiltration and evaporation of the wastewater. The Cactus City SRRA wastewater treatment facility is currently operated by Caltrans District 8 personnel under Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) Waste Discharge Requirements (WDR) Order No. R7-2007-0051, Revision 1 in Appendix B.

CALTRANS is proposing to decommission the ponds and construct a new innovative wastewater treatment system as described in, a letter and Form 200 to CRBRWQCB from CALTRANS dated June 8, 2011, Engineers Report in Appendix C.

This sludge management plan (SMP) has been prepared to fulfill the requirements of CRBRWQCB Order No. R7-2007-0051 Revision 1, Waste Discharge Requirements, Sludge Monitoring, Disposal Methods in Appendix C. This SMP includes the following information:

- A description of the sampling activities
- A description of the proposed work

In addition, the Contractor for this project shall submit a Sewage, Sludge Handling and Disposal Plan (SSHDP) for review and approval at least 90 days prior to the start of the proposed project." The SSHDP will outline actions necessary for the Discharger to be in compliance with the Disposal Methods criteria listed the CRBRWQCB Order No. R7-2007-0051, Revision 1 and all state laws and regulations. Copies of reports submitted to other agencies regarding sludge disposal operations will be included in the Plan.

2.0 BACKGROUND

The Cactus City SRRA wastewater treatment system was constructed in 1982 and consists of a collection system, and a two pond system being regulated by the CRBRWQCB Board Order No: R7-2007-0051, Revision 1. The two pond system is on the eastbound SRRA.

The first pond (Pond 1) has a capacity of approximately 1.57 million gallons, is fully lined with a 40 mil hypalon liner and serves as an oxidation pond designed to provide both primary and secondary treatment of wastewater flows. Pond 1 has a constructed depth of 7-feet and an operating depth of 5-feet.

The second pond (Pond 2) has a capacity of approximately 1.88 million gallons, the side slopes are lined with 40 mil hypalon liner and serves as an infiltration/evaporation pond with a constructed depth of 7-feet and an operating depth of 5-feet.

3.0 SAMPLING ACTIVITIES

In June 2011, CALTRANS hired a consultant to measure the depth of the sludge by performing sludge sampling in Pond 1 and Pond 2. The samples were analyzed by a California Certified Laboratory. During this sampling activity, Pond 1 was operating at its full capacity, Pond 2 was empty with no visible sludge accumulation.

Sludge Depth Sampling

The consultant measured the depth of accumulated sludge at ten locations in Pond 1. At Pond 2 ten locations were verified to have no sludge accumulation. Sludge depths were measured using a Sludge Judge II sampling device.

The depth of sludge recorded at each location was transferred into AutoCAD where a virtual surface of the sludge was created. This surface was compared to a surface derived from the as built drawings of each pond. The difference between the two surfaces was measured and an estimated volume of sludge calculated.

The approximate location of sludge measurement points and depths are shown on Figure 2 and 3.

Sludge Depth Estimates

Pond 1: Based on the sludge depth measurements from Pond 1, the overall average sludge depth was approximately 0.92-feet with elevated sludge depths up to 15 inches near the outlet of the pond. Based on the depth of sludge measured in Pond 1, a sludge volume of approximately 779 cubic yards was calculated. Laboratory analysis determined a solids concentration to be approximately 3.3% solids.

Pond 2: Based on visual observations, the pond was empty with no visible sludge accumulation

Sludge Analytical Sampling

The consultant collected sludge samples from Pond 1 following California approved standard sampling techniques required for analytical analysis. A list of testing methods and constituents tested are shown below. A Sludge Judge II sampling tube was used to collect sludge samples. The approximate locations of discrete sampling points are shown on Figure 3.

Wastewater from the sampling tube was excluded from the sample in order to collect a representative sample of in-situ sludge for solids concentration analysis. Samples were placed into 8 ounce glass jars provided by the laboratory and stored in a cooler at 4°C or less. Discrete samples were delivered within 48-hours to a state-certified laboratory under standard chain-of-custody documentation for analysis. The following constituents were tested;

- pH by method SM 4500H+B

- Nitrate as N by EPA method 353.2
- Total Kjedahl Nitrogen by EPA method 351.2
- Ammonia by EPA method 350.1
- Phosphorus by SM 4500P-BE
- Percent solids by SM 2540G
- CAM 17 metals by EPA methods (6010B & 7470A)
- Chromium VI by method SM3500-Cr
- VOCs by EPA method 8260B
- TPH (Gas & BTEX) by EPA method 8260B
- TPH (Diesel & Motor oil) by EPA method 8015 MOD
- SVOCs by EPA method 8270
- Pesticides by EPA method 8081
- PCB by EPA method 8082

The consultant collected four discrete sludge samples (see Figure 3) from Pond 1 (1-1 through 1-4). The four samples were combined in the laboratory to form a composite sample for Pond 1.

Sludge Analytical Results

A summary of the analytical results for Pond 1 are presented in Table 1.

Table 1: Sludge Sampling Results and Landfill Acceptance Criteria

Analyte				
pH		7.72	Permitted	Permitted
Nitrate as N	mg/l	3.4	NR	Permitted
Total Kjeldahl Nitrogen	mg/l	1120	NR	Permitted (at agronomic rates)
Ammonia as N	mg/l	128	NR	Permitted (at agronomic rates)
Total Phosphorus as P	mg/l	998	NR	Permitted (at agronomic rates)
% Solids	%	3.3	>20%	15 to 50%

Table 1: Sludge Sampling Results and Landfill Acceptance Criteria (Cont.)

Analyte	Units	Pond 1 Sludge Results	Sludge Disposal Options	
			Compost	Land Application
CAM17 Metals				
Antimony	mg/kg	ND	Permitted	Permitted
Arsenic	mg/kg	ND	Permitted	Permitted
Barium	mg/kg	13.8	Permitted	Permitted
Beryllium	mg/kg	ND	Permitted	Permitted
Cadmium	mg/kg	ND	Permitted	Permitted
Chromium	mg/kg	0.4	Permitted	Permitted
Chromium, Hexavalent	mg/kg	ND	Permitted	Permitted
Cobalt	mg/kg	ND	Permitted	Permitted
Copper	mg/kg	4.8	Permitted	Permitted
Lead	mg/kg	ND	Permitted	Permitted
Mercury	mg/kg	ND	Permitted	Permitted
Molybdenum	mg/kg	ND	Permitted	Permitted
Nickel	mg/kg	ND	Permitted	Permitted
Selenium	mg/kg	ND	Permitted	Permitted
Silver	mg/kg	ND	Permitted	Permitted
Thallium	mg/kg	ND	Permitted	Permitted
Vanadium	mg/kg	ND	Permitted	Permitted
Zinc	mg/kg	15.2	Permitted	Permitted
Volatile Organic Compounds				
Acetone	u/kg	ND	Permitted	Permitted
Acrylonitrile	ug/kg	ND	Permitted	Permitted
Benzene	ug/kg	ND	Permitted	Permitted
Bromobenzene	ug/kg	ND	Permitted	Permitted
Bromochloromethane	ug/kg	ND	Permitted	Permitted
Bromodichloromethane	ug/kg	ND	Permitted	Permitted
Bromoform	ug/kg	ND	Permitted	Permitted
Bromomethane	ug/kg	ND	Permitted	Permitted
2-Butanone (MEK)	ug/kg	ND	Permitted	Permitted
n-Butylbenzene	ug/kg	ND	Permitted	Permitted
sec-Butylbenzene	ug/kg	ND	Permitted	Permitted
tert-Butylbenzene	ug/kg	ND	Permitted	Permitted
Carbon disulfide	ug/kg	1.2	Permitted	Permitted
Carbon tetrachloride	ug/kg	ND	Permitted	Permitted
Chlorobenzene	ug/kg	ND	Permitted	Permitted
Chloroethane	ug/kg	ND	Permitted	Permitted
2-Chloroethylvinyl ether	ug/kg	ND	Permitted	Permitted
Chloroform	ug/kg	0.6	Permitted	Permitted
Chloromethane	ug/kg	ND	Permitted	Permitted

2-Chlorotoluene	ug/kg	ND	Permitted	Permitted
4-Chlorotoluene	ug/kg	ND	Permitted	Permitted
Dibromochloromethane	ug/kg	ND	Permitted	Permitted
1,2-Dichlorobenzene	ug/kg	ND	Permitted	Permitted
1,3-Dichlorobenzene	ug/kg	ND	Permitted	Permitted
1,4-Dichlorobenzene	ug/kg	ND	Permitted	Permitted
Dichlorodlfuoromethane (CF 12)	ug/kg	ND	Permitted	Permitted
1,1-Dichloroethene	ug/kg	ND	Permitted	Permitted
1,2-Dichlorethene	ug/kg	ND	Permitted	Permitted
1,1-Dichloroethene	ug/kg	ND	Permitted	Permitted
cis-1,2-Dichloroethene	ug/kg	ND	Permitted	Permitted
trans-1,2-Dichloroethene	ug/kg	ND	Permitted	Permitted
Dichloromethane	ug/kg	ND	Permitted	Permitted
1,2-Dlchloropropane	ug/kg	ND	Permitted	Permitted
1,3-Dichloropropane	ug/kg	ND	Permitted	Permitted
2,2-Dichloropropane	ug/kg	ND	Permitted	Permitted
1,1-Dichloropropene	ug/kg	ND	Permitted	Permitted
cis-1,3-Dichloropropene	ug/kg	ND	Permitted	Permitted
trans-1,3-Dichloropropene	ug/kg	ND	Permitted	Permitted
1,4-Diozane	ug/kg	ND	Permitted	Permitted
Ethylbenzene	ug/kg	0.1	Permitted	Permitted
Ethyl tert-Butyl Ether (ETBE)	ug/kg	ND	Permitted	Permitted
Hexachlorobutadiene	ug/kg	ND	Permitted	Permitted
2-Hexanone	ug/kg	ND	Permitted	Permitted
Isopropylbenzene	ug/kg	ND	Permitted	Permitted
Di-Isopropyl Ether (DIPE)	ug/kg	ND	Permitted	Permitted
p-Isopropyltoluene	ug/kg	ND	Permitted	Permitted
4-Methyl-2-pentanone	ug/kg	ND	Permitted	Permitted
Methyl-2-pentanone (MIBK)	ug/kg	ND	Permitted	Permitted
Methyl tert-Butyl Ether (MTBE)	ug/kg	ND	Permitted	Permitted
Napthalene	ug/kg	ND	Permitted	Permitted
n-Propylbenzene	ug/kg	ND	Permitted	Permitted
Styrene	ug/kg	ND	Permitted	Permitted
Tert-Amyl Methyl Ether (TAME)	ug/kg	ND	Permitted	Permitted
1,1,1,2-Tetrachloroethane	ug/kg	ND	Permitted	Permitted
1,1,2,2-Tetrachloroethane	ug/kg	ND	Permitted	Permitted
Tetrachloroethene (PCE)	ug/kg	ND	Permitted	Permitted
Tetrahydrofuran	ug/kg	3.8	Permitted	Permitted

Tert-Butyl Alcohol (TBA)	ug/kg	ND	Permitted	Permitted
Toluene	ug/kg	7.8	Permitted	Permitted
1,2,3-Trichlorobenzene	ug/kg	ND	Permitted	Permitted
1,2,4-Trichlorobenzene	ug/kg	ND	Permitted	Permitted
1,1,1-Trichloroethane (TCA)	ug/kg	ND	Permitted	Permitted
1,1,2-Trichloroethane	ug/kg	ND	Permitted	Permitted
Trichloroethene (TCE)	ug/kg	ND	Permitted	Permitted
Trichlorotrifluoroethane	ug/kg	ND	Permitted	Permitted
Trichlorofluoromethane (CFC 11)	ug/kg	ND	Permitted	Permitted
1,2,3-Trichloropropane	ug/kg	ND	Permitted	Permitted
1,2,4-Trimethylbenzene	ug/kg	ND	Permitted	Permitted
1,3,5-Trimethylbenzene	ug/kg	ND	Permitted	Permitted
Vinyl acetate	ug/kg	ND	Permitted	Permitted
Vinyl chloride	ug/kg	ND	Permitted	Permitted
m,p-Xylene	ug/kg	ND	Permitted	Permitted
o-Xylene	ug/kg	ND	Permitted	Permitted
Xylenes (total)	ug/kg	ND	Permitted	Permitted
TPH Gasoline Range Organics & Fuel Additives				
Gasoline	ug/kg	32.3	Permitted	NR
Benzene	ug/kg	ND	Permitted	NR
Toluene	ug/kg	7.84	Permitted	NR
Ethylbenzene	ug/kg	0.120	Permitted	NR
Semi Volatile Organic Compounds				
Acenaphtlene	mg/kg	ND	Permitted	Permitted
Acenaphthylene	mg/kg	ND	Permitted	Permitted
Anilline	mg/kg	ND	Permitted	Permitted
Anthracene	mg/kg	ND	Permitted	Permitted
Benzidine	mg/kg	ND	Permitted	Permitted
Benzo (a) anthracene	mg/kg	ND	Permitted	Permitted
Benzo (a) pyrene	mg/kg	ND	Permitted	Permitted
Benzo (a) pyrene	mg/kg	ND	Permitted	Permitted
Benzo (b) fluoranthene	mg/kg	ND	Permitted	Permitted
Benzo (g,h,l) perylene	mg/kg	ND	Permitted	Permitted
Benzo (k) fluoranthene	mg/kg	ND	Permitted	Permitted
Benzyl alcohol	mg/kg	ND	Permitted	Permitted
Bis(2-chloroethoxy)methane	mg/kg	ND	Permitted	Permitted
Bis(2-chloroethyl)ether	mg/kg	ND	Permitted	Permitted
Bis(2-chlorolsopropyl)ether	mg/kg	ND	Permitted	Permitted
Bis(2-ethylhexyl)plhthalate (DEHP)	mg/kg	0.128	Permitted	Permitted
4-Bromophenyl phenyl ether	mg/kg	ND	Permitted	Permitted

Butyl benzyl phtalate	mg/kg	ND	Permitted	Permitted
4-Chloro-3-methylphenol	mg/kg	ND	Permitted	Permitted
4-Chloroanilline	mg/kg	ND	Permitted	Permitted
2-Chlorophenol	mg/kg	ND	Permitted	Permitted
4-Chlorophenyl phenyl ether	mg/kg	ND	Permitted	Permitted
NChrysene	mg/kg	ND	Permitted	Permitted
Dibenz (a,h) anthracene	mg/kg	ND	Permitted	Permitted
Dibenzofuran	mg/kg	ND	Permitted	Permitted
1,2-Dichlorobenzene	mg/kg	ND	Permitted	Permitted
1,3-Dichlorobenzene	mg/kg	ND	Permitted	Permitted
1,4-Dichlorobenzene	mg/kg	ND	Permitted	Permitted
3,3-Dichlorobenzidine	mg/kg	ND	Permitted	Permitted
2,4-Dimethylphenol	mg/kg	ND	Permitted	Permitted
Diethyl phthalate	mg/kg	ND	Permitted	Permitted
2,4-Dimethylphenol	mg/kg	ND	Permitted	Permitted
Dimethyl phthalate	mg/kg	ND	Permitted	Permitted
Di-n-butyl phthalate	mg/kg	0.269	Permitted	Permitted
Di-n-octyl phthalate	mg/kg	ND	Permitted	Permitted
4,6-Dinitro-2-methyphenol	mg/kg	ND	Permitted	Permitted
2,4-Dinitrophenol	mg/kg	ND	Permitted	Permitted
2,4-Dinitrotoluene	mg/kg	ND	Permitted	Permitted
2,6-Dinitrotoluene	mg/kg	ND	Permitted	Permitted
Fluoranthene	mg/kg	ND	Permitted	Permitted
Fluorene	mg/kg	ND	Permitted	Permitted
Hexachlorobenzene	mg/kg	ND	Permitted	Permitted
Hexachlorobutadiene	mg/kg	ND	Permitted	Permitted
Hexachlorocyclopentadiene	mg/kg	ND	Permitted	Permitted
Hexachloroethane	mg/kg	ND	Permitted	Permitted
Indeno (1,2,3-cd) pyrene	mg/kg	ND	Permitted	Permitted
Isophorone	mg/kg	ND	Permitted	Permitted
2-Methylnaphthalene	mg/kg	ND	Permitted	Permitted
2-Methylphenol	mg/kg	ND	Permitted	Permitted
3 & 4-Methylphenol	mg/kg	ND	Permitted	Permitted
Naphthalene	mg/kg	ND	Permitted	Permitted
2-Nitroaniline	mg/kg	ND	Permitted	Permitted
3-Nitroaniline	mg/kg	ND	Permitted	Permitted
4-Nitroaniline	mg/kg	ND	Permitted	Permitted
Nitrobenzene	mg/kg	ND	Permitted	Permitted
2-Nitrophenol	mg/kg	ND	Permitted	Permitted
4-Nitrophenol	mg/kg	ND	Permitted	Permitted
N-Nitrosodlethylamine	mg/kg	ND	Permitted	Permitted

N-Nitrosodlmethylamine	mg/kg	ND	Permitted	Permitted
N-Nitrosomethylethylamine	mg/kg	ND	Permitted	Permitted
N-Nitrosodl-n-butylamine	mg/kg	ND	Permitted	Permitted
N-Nitrosodl-n-propylamine	mg/kg	ND	Permitted	Permitted
N-Nitrosodlphenylamine	mg/kg	ND	Permitted	Permitted
N-Nitrosomorpholine	mg/kg	ND	Permitted	Permitted
N-Nitrosopiperidine	mg/kg	ND	Permitted	Permitted
N-Nitrosopyrrolidine	mg/kg	ND	Permitted	Permitted
Pentachlorophenol	mg/kg	ND	Permitted	Permitted
Phenanthrene	mg/kg	ND	Permitted	Permitted
Phenol	mg/kg	ND	Permitted	Permitted
Pyrene	mg/kg	ND	Permitted	Permitted
Pyridine	mg/kg	ND	Permitted	Permitted
2,3,4,6-Tetrachlorophenol	mg/kg	ND	Permitted	Permitted
1,2,4-Trichlorobenzene	mg/kg	ND	Permitted	Permitted
2,4,5-Trichlorophenol	mg/kg	ND	Permitted	Permitted
2,4,6-Trichlorophenol	mg/kg	ND	Permitted	Permitted
TPH Diesel & Motor Oil				
Diesel	mg/kg	79	Permitted	NR
Motor Oil	mg/kg	279	Permitted	NR
Pesticides				
alpha-BHC	mg/kg	ND	Permitted	Permitted
beta-BHC	mg/kg	ND	Permitted	Permitted
gamma-BHC (Lindane)	mg/kg	ND	Permitted	Permitted
delta-BHC	mg/kg	ND	Permitted	Permitted
Aldrin	mg/kg	ND	Permitted	Permitted
Chlordane (tech)	mg/kg	ND	Permitted	Permitted
Dieldrine	mg/kg	ND	Permitted	Permitted
Endosulfane I	mg/kg	ND	Permitted	Permitted
Endosulfane II	mg/kg	ND	Permitted	Permitted
Endosulfane sulfate	mg/kg	ND	Permitted	Permitted
Endrin	mg/kg	ND	Permitted	Permitted
Endrin aldehyde	mg/kg	ND	Permitted	Permitted
Heptachlor	mg/kg	ND	Permitted	Permitted
Heptachlor epoxide	mg/kg	ND	Permitted	Permitted
Methoxychlor	mg/kg	ND	Permitted	Permitted
4,4-DDT	mg/kg	ND	Permitted	Permitted
4,4-DDE	mg/kg	ND	Permitted	Permitted
4,4-DDD	mg/kg	ND	Permitted	Permitted
Toxaphene	mg/kg	ND	Permitted	Permitted
alpha-Chlordane	mg/kg	ND	Permitted	Permitted

Endrine ketone	mg/kg	ND	Permitted	Permitted
gamme-Chlordane	mg/kg	ND	Permitted	Permitted
Kepone	mg/kg	ND	Permitted	Permitted
Mirex	mg/kg	ND	Permitted	Permitted
Polychlorinated Byphenols (PCBs)				
PCB-1260	mg/kg	ND	Permitted	Permitted
PCB-1254	mg/kg	ND	Permitted	Permitted
PCB-1248	mg/kg	ND	Permitted	Permitted
PCB-1242	mg/kg	ND	Permitted	Permitted
PCB-1232	mg/kg	ND	Permitted	Permitted
PCB-1221	mg/kg	ND	Permitted	Permitted
PCB-1016	mg/kg	ND	Permitted	Permitted

Notes: Compost as disposal was based on processed sludge meeting EPA 'Class A' criteria.
NR – Not Reportable as part of acceptance.

In general, constituents of concern (COCs) for biosolids disposal via composting or land application were below acceptance criteria. The Laboratory analytical report is provided in Appendix A.

4.0 PROPOSED WORK

The proposed work will be done by the contractor. As part of the contract, the contractor will submit a Sewage, Sludge Handling and Disposal plan, (SSHDP) which will meet the requirements of this SMP, CRBRWQCB Order No. R7-2007-0051, Revision 1 and all state laws and regulations in Appendix C. The SSHDP will be submitted to the CRBRWQCB for review and approval.

A CALTRANS Engineer will oversee the contractor's work. The contractor is expected to be selected 12/16/11. Construction work is expected to begin approximately on 04/06/12.

This SMP specifically addresses the methods of sewage transfer and sludge removal for the proposed sewage pond decommissioning project. The sewage and sludge maintenance aspects of the project include:

- Sewage Transfer
- Sludge Dewatering and Disposal Options
- Disposal of the existing liner and appurtenances

Sewage Transfer

Any sewage effluent liquid overlying the sludge in pond 1 will be transferred to Pond 2. This will enable the contractor to dewater and dispose of the sludge, liner and appurtenances from pond 1. The sewage effluent will percolate and evaporate in pond 2. The loose sludge remaining in pond 2 will then be dewatered and the sludge, liner and appurtenances will be then be disposed of.

The piping and pumps required for this sewage dewatering and transfer shall be contained and anchored appropriately on the surface and protected from traffic, and maintained in good operation without breaks, leaks, blockages etc.

The contractor will include the sewage transfer equipment to be used for this work in the SSHDP.

Sludge Dewatering and Disposal Options

This work will consist of dewatering, removing and transporting the sludge to a facility permitted for the disposal of sludge. The piping and pumps required for this work shall be contained and anchored appropriately on the surface and protected from traffic, and maintained in good operation without breaks, leaks, blockages etc.

Mechanical dewatering devices must be fully contained and are not permitted to drip supernate, sewage or decant water from mechanical dewatering onto the ground. Sludge removed from the ponds will be dewatered and stored or disposed of using storage bins or trucks. and transported to a permitted facility. Trucks transporting the sludge will not drip during transport. The contractor will determine sludge transport methods prior to project implementation and describe in detail in the SSHDP. The contractor shall perform any odor control required, by CRBRWQCB, arising from this work and will include the method of odor control in the SSHDP.

The contractor will properly manifest and transport sludge utilizing a US Department of Transportation licensed transporter. If sludge is dripped during transport, the contractor will immediately stop the transport of sludge, re-evaluate and modify the transportation methods to prevent sludge from dripping during transport. The contractor will clean up sludge dripped/spilled during transportation. The contractor will follow all applicable county, state and federal requirements for the handling, transporting and disposing of sewage sludge.

The contractor will utilize Option 1 or Option 2 of the following options or provide an economical option for the sludge dewatering and disposal. The option selected will be submitted in the SSHDP and approved by CRBRWQCB.

Option 1 - Mechanical Dewatering (i.e. Rotary Press): A rotary press is one of the most efficient methods of mechanical dewatering available. This method involves feeding a sludge/polymer blend into a rectangular channel which is then passed between two parallel revolving screens. The frictional force of the slow moving screens, coupled with the controlled outlet restriction, results in the extrusion of a very dry cake. A rotary press can obtain a solids concentration of 45% or greater depending on characteristics of the feed sludge. The press is easy to operate and maintain because of its robust construction and limited number of mechanical parts. It is entirely enclosed, runs quietly, takes up little space and consumes little energy. Filter cake is easily transported to approved disposal facilities. The contractor may choose the rotary press or other type of mechanical dewatering.

Option 2 - Chemical Dewatering (i.e. Polymer Injection Combined with Geotextile Dewatering Tubes): Dewatering tubes are generally an economical and cost effective means of

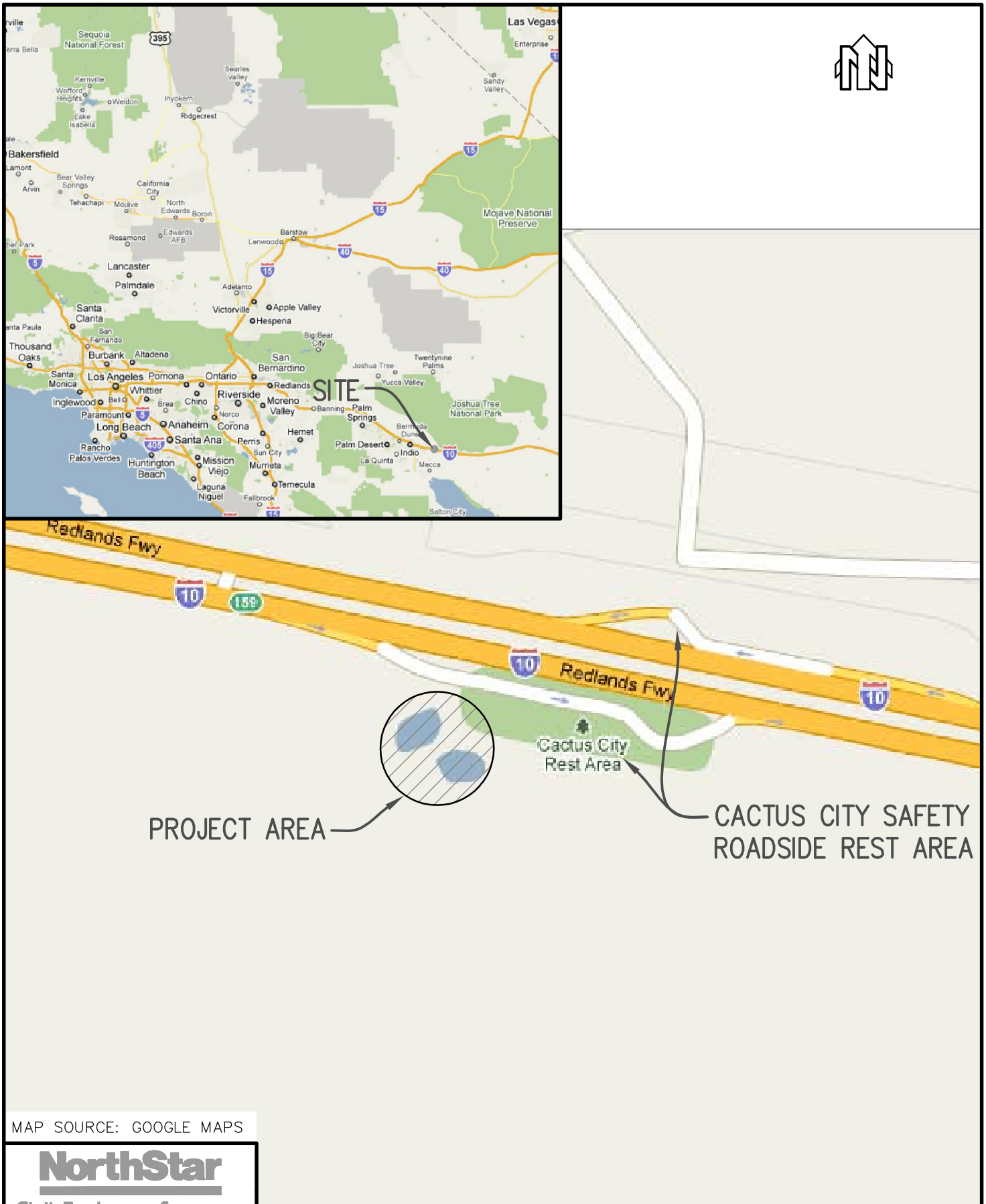
dewatering sludge. Geotextile tubes come in a variety of fabrics and pore sizes for optimum performance. Geotextile tubes are normally filled to approximately 80% capacity with the sludge mixture and then allowed to drain. Once consolidation has taken place the dewatering tubes are refilled, and the cycle continues, until the tube has reached approximately 85% capacity with consolidated materials. Better consolidation of sludge can be achieved when using polymers and when allowing tubes to 'rest' for longer periods of time. Once consolidated the geotextile tube can be trucked to an off-site location for disposal. The contractor may choose dewatering tubes or another option to dewater the sludge.

5.0 REPORTING REQUIREMENTS

The contractor will immediately inform the Caltrans engineer of a spill of sewage; or any other adverse condition that results in a discharge outside the work area limits that could affect compliance with the WDRs. The Caltrans engineer will immediately notify the CRBRWQCB of the discharge. The Engineer will provide written report to the CRBRWQCB within two weeks of the discharge. Reporting will be required, if the contractor identifies discharge from the project site into surface waters or drainage systems, or if the project receives a written notice or order from a regulatory agency.

The report will include the date, time, location, nature of the operation, and type of discharge, including the cause or nature of the notice or order.

FIGURE 1 –
SITE LOCATION



MAP SOURCE: GOOGLE MAPS

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Civil Engineers..Surveyors
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111 MISSION RANCH BLVD. SUITE 100
Chico, California 95926
Phone: (530) 893-1600 Fax: (530) 893-2113
Web Site: www.northstareng.com

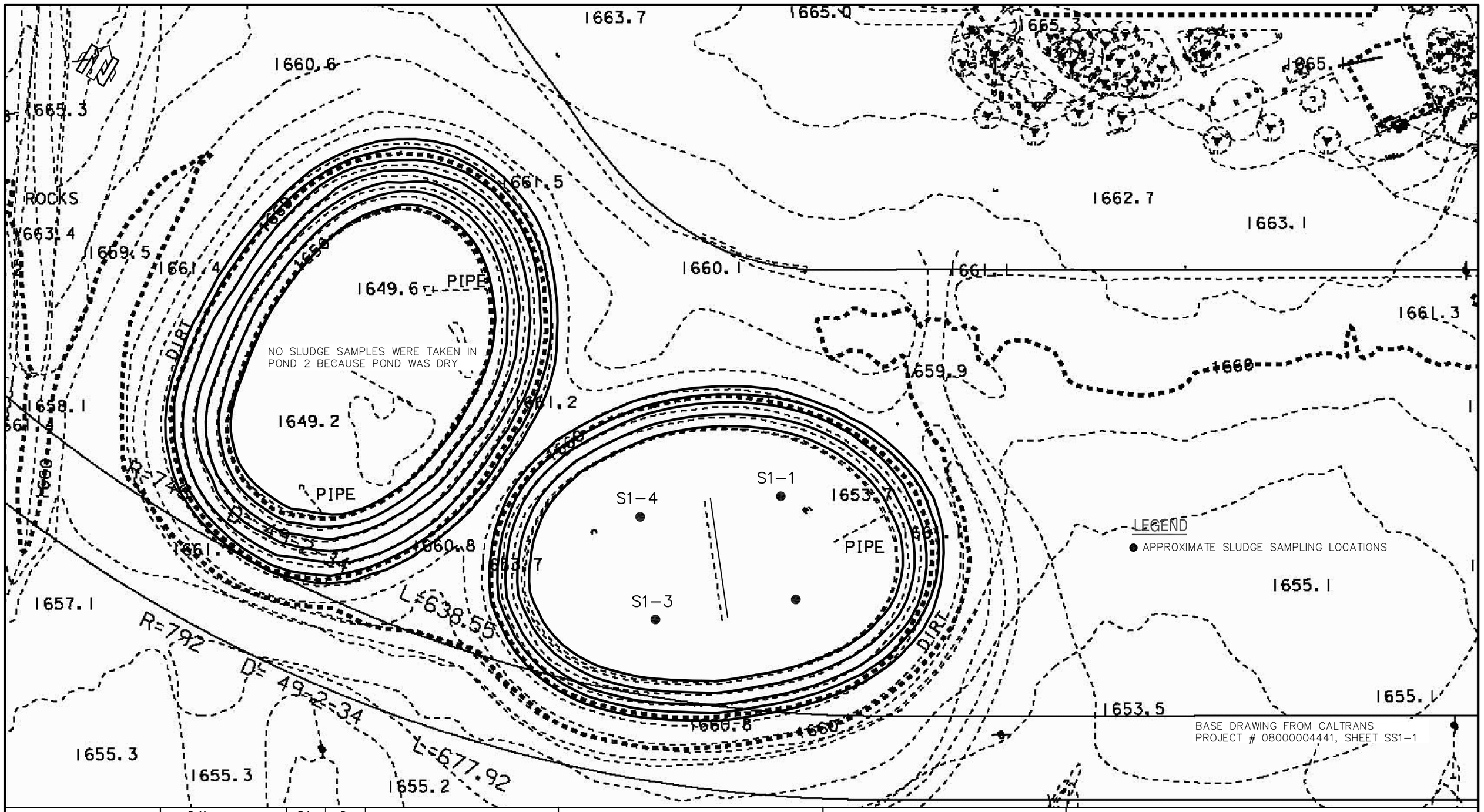
CACTUS CITY S.R.R.A PONDS
STATE OF CALIFORNIA
DEPARTMENT OF
TRANSPORTATION - T.O. # 68503

FIGURE 1

PROJECT LOCATION

Job Number	Scale		Date: 23 mAY, 2011
11-150	N/A Horz.	N/A Vert.	Figure 1

FIGURE 2 –
APPROXIMATE SLUDGE DEPTH MEASUREMENT LOCATIONS



Designed: DJW	Revision	Date	By
Drawn By: TGS			
Date: 8/5/2011			

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Chico, California

111 Mission Ranch Blvd. Ste 100
Chico, California 95926
Phone: (530) 893-1600 Fax: (530) 893-2113
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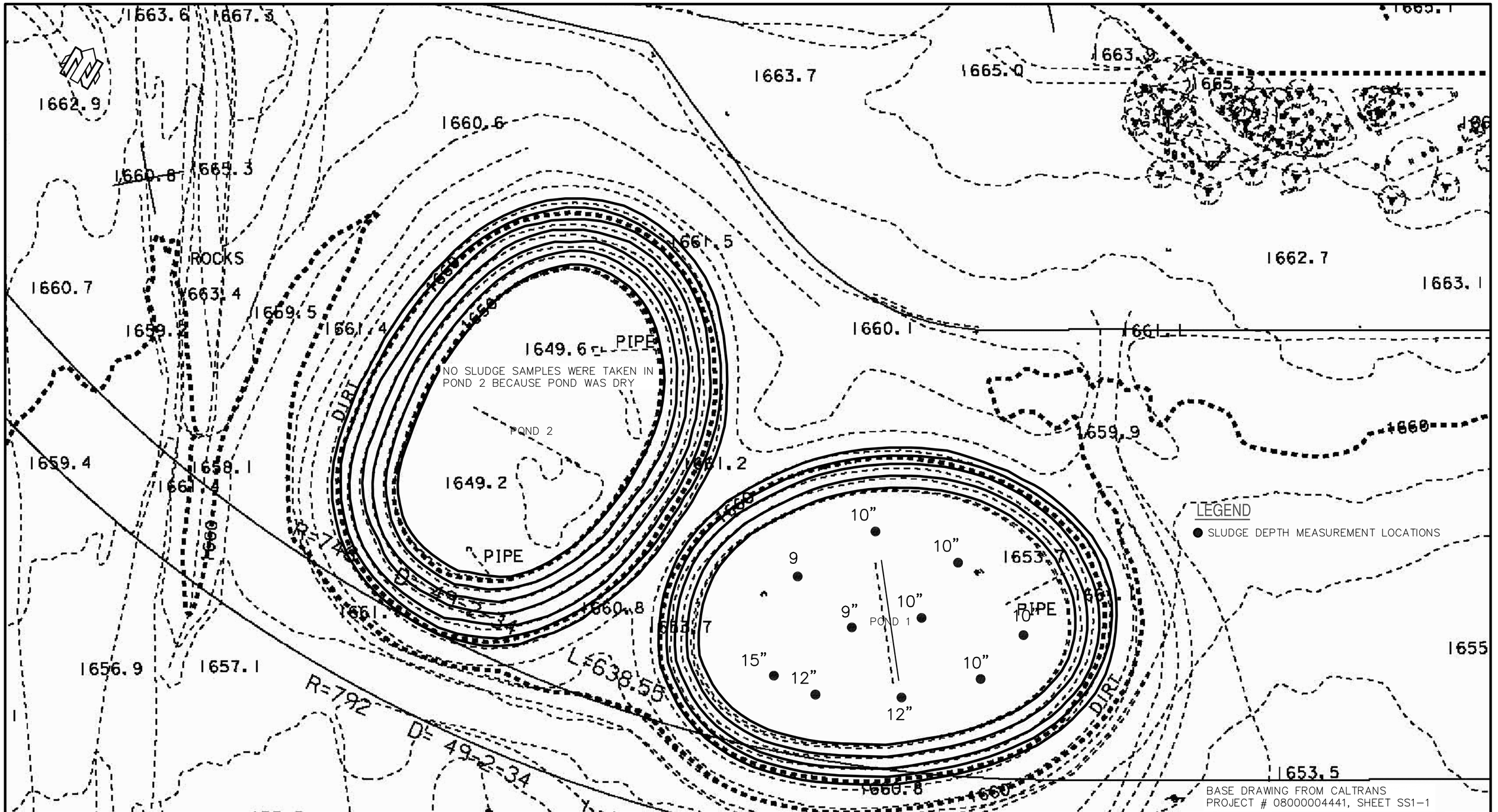
CACTUS CITY S.R.R.A PONDS
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIGURE 2
APPROXIMATE SLUDGE SAMPLING LOCATIONS

Job Number	Scale		CALTRANS T.O. #
11-150	1"=50' Horz.	N/A Vert.	68502

FIGURE 3 –
APPROXIMATE SLUDGE SAMPLING LOCATIONS



Designed: DJW	Revision	Date	By
Drawn By: TGB			
Date: 8/5/2011			

NorthStar
Civil Engineers..Surveyors
Chico, California

111 Mission Ranch Blvd. Ste 100
Chico, California 95926
Phone: (530) 893-1600 Fax: (530) 893-2113
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CACTUS CITY S.R.R.A PONDS
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

FIGURE 3

APPROXIMATE SLUDGE DEPTH MEASUREMENT LOCATIONS

Job Number	Scale		CALTRANS T.O. #
11-150	1"=50' Horz.	N/A Vert.	68502

Appendix A

basic laboratory

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3860 Morrow Lane, Suite F
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voice 530.894.8966
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July 08, 2011

Lab ID: 1060765

NICK WEIGEL
NORTHSTAR ENGINEERING
111 MISSION RANCH BLVD SUITE 100
CHICO, CA 95926
RE: CACTUS CITY 11-150

Dear NICK WEIGEL ,

Enclosed are the analysis results for Work Order number 1060765. All analysis were performed under strict adherence to our established Quality Assurance Plan. Any abnormalities are listed in the qualifier section of this report.

If you have any questions regarding these results, please feel free to contact us at any time. We appreciate the opportunity to service your environmental testing needs.

Sincerely,

For Ricky Jensen

Ricky Jensen

Ricky D. Jensen
Laboratory Director
California ELAP Certification Number 1677

basic laboratory

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Report To: NORTHSTAR ENGINEERING
111 MISSION RANCH BLVD SUITE 100
CHICO, CA 95926
Attention: NICK WEIGEL
Project: CACTUS CITY 11-150

Lab No: 1060765
Reported: 07/08/11
Phone: (530) 893-1600
P.O. #

General Chemistry - Solid

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04) Sampled:06/18/11 11:49 Received:06/20/11 08:04									
% Solids	%	**3.3**		0.02	0.06	SM 2540G	06/29/11	06/29/11	B1F0826
pH	pH Units	**7.72**		0.01	0.01	EPA 9045	07/06/11	07/06/11	B1G0079
Nitrate as N	mg/kg	**3.4**		0.1	0.5	EPA 353.2	06/30/11	06/30/11	B1F0858
Total Kjeldahl Nitrogen	"	**1120**	QM-4X	12.5	25.0	EPA 351.2	06/22/11	06/21/11	B1F0450
Ammonia as N	"	**128**		10.0	20.0	EPA 350.1	07/01/11	06/29/11	B1F0833
Total Phosphorus as P	"	**998**		100	500	EPA 6020	07/05/11	06/27/11	B1F0768

Approved By
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P.O. #

Metals - TTLC

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04) Sampled:06/18/11 11:49 Received:06/20/11 08:04									
Antimony	mg/kg	ND		1.0	4.0	EPA 6010B	06/24/11	06/20/11	B1F0582
Arsenic	"	ND		0.8	4.0	"	"	"	"
Barium	"	**13.8**		0.4	2.0	"	"	"	"
Beryllium	"	ND		0.4	2.0	"	"	"	"
Cadmium	"	ND		0.4	2.0	"	"	"	"
Chromium	"	**0.4**	J	0.4	2.0	"	"	"	"
Chromium, Hexavalent	"	ND	QM-05, R-08, Z-01	2.0	2.0	3060/7196A	07/05/11	07/05/11	B1G0057
Cobalt	"	ND		2.0	10.0	EPA 6010B	06/24/11	06/20/11	B1F0582
Copper	"	**4.8**		0.2	1.0	"	"	"	"
Lead	"	ND		0.5	2.5	"	"	"	"
Mercury	"	ND		0.07	0.3	EPA 7471A	06/24/11	06/24/11	B1F0708
Molybdenum	"	ND		1.0	5.0	EPA 6010B	06/24/11	06/20/11	B1F0582
Nickel	"	ND		0.5	2.0	"	"	"	"
Selenium	"	ND		0.5	2.0	"	"	"	"
Silver	"	ND		0.8	4.0	"	"	"	"
Thallium	"	ND		1.0	4.0	"	"	"	"
Vanadium	"	ND		4.0	20.0	"	"	"	"
Zinc	"	**15.2**		2.0	10.0	"	"	"	"

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Attention: NICK WEIGEL
Project: CACTUS CITY 11-150

Lab No: 1060765
Reported: 07/08/11
Phone: (530) 893-1600
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Volatile Organic Compounds - Solid

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04)		**Sampled:06/18/11 11:49**		**Received:06/20/11 08:04**					
Acetone	ug/kg	ND	I-06	12.0	50.0	EPA 8260B	06/22/11	06/22/11	B1F0684
Acrylonitrile	"	ND	I-06	1.2	50.0	"	"	"	"
Benzene	"	ND	I-06	0.05	5.0	"	"	"	"
Bromobenzene	"	ND	I-06	0.1	5.0	"	"	"	"
Bromochloromethane	"	ND	I-06	0.2	5.0	"	"	"	"
Bromodichloromethane	"	ND	I-06	0.1	5.0	"	"	"	"
Bromoform	"	ND	I-06	0.3	5.0	"	"	"	"
Bromomethane	"	ND	I-06	0.1	5.0	"	"	"	"
2-Butanone (MEK)	"	ND	I-06	1.0	50.0	"	"	"	"
n-Butylbenzene	"	ND	I-06	0.1	5.0	"	"	"	"
sec-Butylbenzene	"	ND	I-06	0.02	5.0	"	"	"	"
tert-Butylbenzene	"	ND	I-06	0.1	5.0	"	"	"	"
Carbon disulfide	"	**1.2**	I-06, J	0.1	5.0	"	"	"	"
Carbon tetrachloride	"	ND	I-06	0.1	5.0	"	"	"	"
Chlorobenzene	"	ND	I-06	0.1	5.0	"	"	"	"
Chloroethane	"	ND	I-06	0.2	5.0	"	"	"	"
2-Chloroethylvinyl ether	"	ND	I-06	0.4	5.0	"	"	"	"
Chloroform	"	**0.6**	I-06, J	0.2	5.0	"	"	"	"
Chloromethane	"	ND	I-06	0.1	5.0	"	"	"	"
2-Chlorotoluene	"	ND	I-06	0.1	5.0	"	"	"	"
4-Chlorotoluene	"	ND	I-06	0.1	5.0	"	"	"	"
Dibromochloromethane	"	ND	I-06	0.1	5.0	"	"	"	"
1,2-Dibromo-3-chloropropane (DBCP)	"	ND	I-06	0.3	5.0	"	"	"	"
1,2-Dibromoethane (EDB)	"	ND	I-06	0.2	5.0	"	"	"	"
Dibromomethane	"	ND	I-06	0.2	5.0	"	"	"	"
1,2-Dichlorobenzene	"	ND	I-06	0.1	5.0	"	"	"	"
1,3-Dichlorobenzene	"	ND	I-06	0.1	5.0	"	"	"	"
1,4-Dichlorobenzene	"	ND	I-06	0.1	5.0	"	"	"	"
Dichlorodifluoromethane (CFC 12)	"	ND	I-06	0.1	5.0	"	"	"	"
1,1-Dichloroethane	"	ND	I-06	0.1	5.0	"	"	"	"
1,2-Dichloroethane	"	ND	I-06	0.1	5.0	"	"	"	"
1,1-Dichloroethene	"	ND	I-06	0.2	5.0	"	"	"	"
cis-1,2-Dichloroethene	"	ND	I-06	0.1	5.0	"	"	"	"
trans-1,2-Dichloroethene	"	ND	I-06	0.1	5.0	"	"	"	"
Dichloromethane	"	ND	I-06	0.7	10.0	"	"	"	"
1,2-Dichloropropane	"	ND	I-06	0.1	5.0	"	"	"	"
1,3-Dichloropropane	"	ND	I-06	0.1	5.0	"	"	"	"
2,2-Dichloropropane	"	ND	I-06	0.2	5.0	"	"	"	"
1,1-Dichloropropene	"	ND	I-06	0.2	5.0	"	"	"	"
cis-1,3-Dichloropropene	"	ND	I-06	0.1	5.0	"	"	"	"
trans-1,3-Dichloropropene	"	ND	I-06	0.2	5.0	"	"	"	"
1,4-Dioxane	"	ND	I-06	8.9	250	"	"	"	"
Ethylbenzene	"	**0.1**	I-06, J	0.04	5.0	"	"	"	"
Ethyl tert-Butyl Ether (ETBE)	"	ND	I-06	0.1	5.0	"	"	"	"
Hexachlorobutadiene	"	ND	I-06	0.2	5.0	"	"	"	"
2-Hexanone	"	ND	I-06	1.0	50.0	"	"	"	"
Isopropylbenzene	"	ND	I-06	0.1	5.0	"	"	"	"
Di-Isopropyl Ether (DIPE)	"	ND	I-06	0.1	5.0	"	"	"	"
p-Isopropyltoluene	"	ND	I-06	0.04	5.0	"	"	"	"
4-Methyl-2-pentanone (MIBK)	"	ND	I-06	1.2	50.0	"	"	"	"
Methyl tert-Butyl Ether (MTBE)	"	ND	I-06	0.1	5.0	"	"	"	"
Naphthalene	"	ND	I-06	0.1	5.0	"	"	"	"

Approved By

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Report To: NORTHSTAR ENGINEERING
111 MISSION RANCH BLVD SUITE 100
CHICO, CA 95926
Attention: NICK WEIGEL
Project: CACTUS CITY 11-150

Lab No: 1060765
Reported: 07/08/11
Phone: (530) 893-1600
P.O. #

Volatile Organic Compounds - Solid

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04) Sampled:06/18/11 11:49 Received:06/20/11 08:04									
n-Propylbenzene	"	ND	I-06	0.02	5.0	"	"	06/22/11	"
Styrene	"	ND	I-06	0.1	5.0	"	"	"	"
tert-Amyl Methyl Ether (TAME)	"	ND	I-06	0.2	5.0	"	"	"	"
1,1,1,2-Tetrachloroethane	"	ND	I-06	0.1	5.0	"	"	"	"
1,1,2,2-Tetrachloroethane	"	ND	I-06	0.1	5.0	"	"	"	"
Tetrachloroethene (PCE)	"	ND	I-06	0.1	5.0	"	"	"	"
Tetrahydrofuran	"	**3.8**	J, I-06	2.5	50.0	"	"	"	"
tert-Butyl Alcohol (TBA)	"	ND	I-06	2.1	50.0	"	"	"	"
Toluene	"	**7.8**	I-06	0.1	5.0	"	"	"	"
1,2,3-Trichlorobenzene	"	ND	I-06	0.2	5.0	"	"	"	"
1,2,4-Trichlorobenzene	"	ND	I-06	0.1	5.0	"	"	"	"
1,1,1-Trichloroethane (TCA)	"	ND	I-06	0.1	5.0	"	"	"	"
1,1,2-Trichloroethane	"	ND	I-06	0.2	5.0	"	"	"	"
Trichloroethene (TCE)	"	ND	I-06	0.1	5.0	"	"	"	"
Trichlorotrifluoroethane	"	ND	I-06	0.1	5.0	"	"	"	"
Trichlorofluoromethane (CFC 11)	"	ND	I-06	0.7	5.0	"	"	"	"
1,2,3-Trichloropropane	"	ND	I-06	0.2	5.0	"	"	"	"
1,2,4-Trimethylbenzene	"	ND	I-06	0.1	5.0	"	"	"	"
1,3,5-Trimethylbenzene	"	ND	I-06	0.1	5.0	"	"	"	"
Vinyl acetate	"	ND	I-06	0.6	5.0	"	"	"	"
Vinyl chloride	"	ND	I-06	0.2	5.0	"	"	"	"
m,p-Xylene	"	ND	I-06	0.1	10.0	"	"	"	"
o-Xylene	"	ND	I-06	0.1	5.0	"	"	"	"
Xylenes (total)	"	ND	I-06	0.1	15.0	"	"	"	"
Surrogate: 1,2-Dichloroethane-d4		*97.4 %*		*53.6-162*		"	"	"	"
Surrogate: Toluene-d8		*118 %*		*51.2-146*		"	"	"	"
Surrogate: 4-Bromofluorobenzene		*75.3 %*		*50.2-117*		"	"	"	"

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Report To: NORTHSTAR ENGINEERING
111 MISSION RANCH BLVD SUITE 100
CHICO, CA 95926
Attention: NICK WEIGEL
Project: CACTUS CITY 11-150

Lab No: 1060765
Reported: 07/08/11
Phone: (530) 893-1600
P.O. #

TPH Gasoline Range Organics & Fuel Additives - Solid

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04) Sampled:06/18/11 11:49 Received:06/20/11 08:04									
Gasoline	ug/kg	**32.3**	I-06, J	17.0	60.0	LUFT GC/MS (8260B)	06/22/11	06/22/11	B1F0684
Benzene	"	ND	I-06	0.050	5.00	"	"	"	"
Toluene	"	**7.84**	I-06	0.100	5.00	"	"	"	"
Ethylbenzene	"	**0.120**	I-06, J	0.040	5.00	"	"	"	"
Xylenes (total)	"	ND	I-06	0.200	15.0	"	"	"	"
Surrogate: 4-Bromofluorobenzene		*75.3 %*		*42.7-126*		"	"	"	"

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CHICO, CA 95926
Attention: NICK WEIGEL
Project: CACTUS CITY 11-150

Lab No: 1060765
Reported: 07/08/11
Phone: (530) 893-1600
P.O. #

Semi Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04) Sampled:06/18/11 11:49 Received:06/20/11 08:04									
Acenaphthene	mg/kg	ND	R-08	0.048	0.990	EPA 8270C	06/24/11	06/23/11	B1F0663
Acenaphthylene	"	ND	R-08	0.099	0.990	"	"	"	"
Aniline	"	ND	R-08	0.099	0.990	"	"	"	"
Anthracene	"	ND	R-08	0.099	0.990	"	"	"	"
Benzidine	"	ND	R-08	0.099	0.990	"	"	"	"
Benzo (a) anthracene	"	ND	R-08	0.099	0.990	"	"	"	"
Benzo (a) pyrene	"	ND	R-08	0.099	0.990	"	"	"	"
Benzo (b) fluoranthene	"	ND	R-08	0.099	0.990	"	"	"	"
Benzo (g,h,i) perylene	"	ND	R-08	0.099	0.990	"	"	"	"
Benzo (k) fluoranthene	"	ND	R-08	0.099	0.990	"	"	"	"
Benzyl alcohol	"	ND	R-08	0.099	0.990	"	"	"	"
Bis(2-chloroethoxy)methane	"	ND	R-08	0.099	0.990	"	"	"	"
Bis(2-chloroethyl)ether	"	ND	R-08	0.048	0.990	"	"	"	"
Bis(2-chloroisopropyl)ether	"	ND	R-08	0.099	0.990	"	"	"	"
Bis(2-ethylhexyl)adipate	"	ND	R-08	0.099	0.990	"	"	"	"
Bis(2-ethylhexyl)phthalate (DEHP)	"	**0.128**	J, R-08	0.099	0.990	"	"	"	"
4-Bromophenyl phenyl ether	"	ND	R-08	0.099	0.990	"	"	"	"
Butyl benzyl phthalate	"	ND	R-08	0.099	0.990	"	"	"	"
4-Chloro-3-methylphenol	"	ND	R-08	0.048	0.990	"	"	"	"
4-Chloroaniline	"	ND	R-08	0.099	0.990	"	"	"	"
2-Chloronaphthalene	"	ND	R-08	0.099	0.990	"	"	"	"
2-Chlorophenol	"	ND	R-08	0.099	0.990	"	"	"	"
4-Chlorophenyl phenyl ether	"	ND	R-08	0.099	0.990	"	"	"	"
Chrysene	"	ND	R-08	0.099	0.990	"	"	"	"
Dibenz (a,h) anthracene	"	ND	R-08	0.099	0.990	"	"	"	"
Dibenzofuran	"	ND	R-08	0.099	0.990	"	"	"	"
1,2-Dichlorobenzene	"	ND	R-08	0.002	0.006	"	"	"	"
1,3-Dichlorobenzene	"	ND	R-08	0.002	0.006	"	"	"	"
1,4-Dichlorobenzene	"	ND	R-08	0.002	0.006	"	"	"	"
3,3´-Dichlorobenzidine	"	ND	R-08	0.099	0.990	"	"	"	"
2,4-Dichlorophenol	"	ND	R-08	0.099	0.990	"	"	"	"
Diethyl phthalate	"	ND	R-08	0.099	0.990	"	"	"	"
2,4-Dimethylphenol	"	ND	R-08	0.099	0.990	"	"	"	"
Dimethyl phthalate	"	ND	R-08	0.099	0.990	"	"	"	"
Di-n-butyl phthalate	"	**0.269**	J, R-08	0.099	0.990	"	"	"	"
Di-n-octyl phthalate	"	ND	R-08	0.099	0.990	"	"	"	"
4,6-Dinitro-2-methylphenol	"	ND	R-08	0.099	0.990	"	"	"	"
2,4-Dinitrophenol	"	ND	R-08	0.099	0.990	"	"	"	"
2,4-Dinitrotoluene	"	ND	R-08	0.099	0.990	"	"	"	"
2,6-Dinitrotoluene	"	ND	R-08	0.099	0.990	"	"	"	"
Fluoranthene	"	ND	R-08	0.048	0.990	"	"	"	"
Fluorene	"	ND	R-08	0.099	0.990	"	"	"	"
Hexachlorobenzene	"	ND	R-08	0.099	0.990	"	"	"	"
Hexachlorobutadiene	"	ND	R-08	0.002	0.006	"	"	"	"
Hexachlorocyclopentadiene	"	ND	R-08	0.099	0.990	"	"	"	"
Hexachloroethane	"	ND	R-08	0.002	0.006	"	"	"	"
Indeno (1,2,3-cd) pyrene	"	ND	R-08	0.099	0.990	"	"	"	"
Isophorone	"	ND	R-08	0.099	0.990	"	"	"	"
2-Methylnaphthalene	"	ND	R-08	0.099	0.990	"	"	"	"
2-Methylphenol	"	ND	R-08	0.099	0.990	"	"	"	"
3 & 4-Methylphenol	"	ND	R-08	0.099	0.990	"	"	"	"
Naphthalene	"	ND	R-08	0.002	0.006	"	"	"	"

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Semi Volatile Organic Compounds

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04) Sampled:06/18/11 11:49 Received:06/20/11 08:04									
2-Nitroaniline	"	ND	R-08	0.099	0.990	"	"	06/23/11	"
3-Nitroaniline	"	ND	R-08	0.099	0.990	"	"	"	"
4-Nitroaniline	"	ND	R-08	0.099	0.990	"	"	"	"
Nitrobenzene	"	ND	R-08	0.099	0.990	"	"	"	"
2-Nitrophenol	"	ND	R-08	0.099	0.990	"	"	"	"
4-Nitrophenol	"	ND	R-08	0.099	0.990	"	"	"	"
N-Nitrosodiethylamine	"	ND	R-08	0.099	0.990	"	"	"	"
N-Nitrosodimethylamine	"	ND	R-08	0.099	0.990	"	"	"	"
N-Nitrosomethylethylamine	"	ND	R-08	0.099	0.990	"	"	"	"
N-Nitrosodi-n-butylamine	"	ND	R-08	0.099	0.990	"	"	"	"
N-Nitrosodi-n-propylamine	"	ND	R-08	0.099	0.990	"	"	"	"
N-Nitrosodiphenylamine	"	ND	R-08	0.099	0.990	"	"	"	"
N-Nitrosomorpholine	"	ND	R-08	0.099	0.990	"	"	"	"
N-Nitrosopiperidine	"	ND	R-08	0.099	0.990	"	"	"	"
N-Nitrosopyrrolidine	"	ND	R-08	0.099	0.990	"	"	"	"
Pentachlorophenol	"	ND	R-08	0.099	0.990	"	"	"	"
Phenanthrene	"	ND	R-08	0.099	0.990	"	"	"	"
Phenol	"	ND	R-08	0.099	0.990	"	"	"	"
Pyrene	"	ND	R-08	0.099	0.990	"	"	"	"
Pyridine	"	ND	R-08	0.099	0.990	"	"	"	"
2,3,4,6-Tetrachlorophenol	"	ND	R-08	0.099	0.990	"	"	"	"
1,2,4-Trichlorobenzene	"	ND	R-08	0.002	0.006	"	"	"	"
2,4,5-Trichlorophenol	"	ND	R-08	0.099	0.990	"	"	"	"
2,4,6-Trichlorophenol	"	ND	R-08	0.099	0.990	"	"	"	"
Surrogate: 2-Fluorobiphenyl		*47.0 %*		*26.2-110*		"	"	"	"
Surrogate: 2-Fluorophenol		*37.2 %*		*18-97.9*		"	"	"	"
Surrogate: Nitrobenzene-d5		*34.9 %*		*17.7-119*		"	"	"	"
Surrogate: Phenol-d5		*46.8 %*		*30.8-106*		"	"	"	"
Surrogate: Terphenyl-dl4		*112 %*		*31.7-134*		"	"	"	"
Surrogate: 2,4,6-Tribromophenol		*93.6 %*		*48.6-152*		"	"	"	"

Approved By
Basic Laboratory, Inc.
California ELAP Cert #1677 and #2718

basic laboratory
www.basiclab.com
2218 Railroad Avenue, Redding, California 96001, voice 530.243.7234, fax 530.243.7494
3860 Morrow Lane, Suite F, Chico, California 95928, voice 530.894.8966, fax 530.894.5143

Report To: NORTHSTAR ENGINEERING
111 MISSION RANCH BLVD SUITE 100
CHICO, CA 95926
Attention: NICK WEIGEL
Project: CACTUS CITY 11-150

Lab No: 1060765
Reported: 07/08/11
Phone: (530) 893-1600
P.O. #

TPH Diesel & Motor Oil - Solid

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04) Sampled:06/18/11 11:49 Received:06/20/11 08:04									
Diesel	mg/kg	**79**	D-02, D-09A	3	30	EPA 8015 MOD	06/24/11	06/22/11	B1F0628
Motor Oil	"	**279**	D-02	3	30	"	"	"	"
Surrogate: Octacosane		*128 %*		*46.6-128*		"	"	"	"

Approved By

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Attention: NICK WEIGEL
Project: CACTUS CITY 11-150

Lab No: 1060765
Reported: 07/08/11
Phone: (530) 893-1600
P.O. #

Pesticides

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04) Sampled:06/18/11 11:49 Received:06/20/11 08:04									
alpha-BHC	mg/kg	ND	R-08	0.02	0.06	EPA 8081	06/29/11	06/23/11	B1F0662
beta-BHC	"	ND	R-08	0.02	0.06	"	"	"	"
gamma-BHC (Lindane)	"	ND	R-08	0.02	0.06	"	"	"	"
delta-BHC	"	ND	R-08	0.02	0.06	"	"	"	"
Aldrin	"	ND	R-08	0.02	0.06	"	"	"	"
Chlordane (tech)	"	ND	R-08	0.02	1.50	"	"	"	"
Dieldrin	"	ND	R-08	0.02	0.06	"	"	"	"
Endosulfan I	"	ND	R-08	0.02	0.06	"	"	"	"
Endosulfan II	"	ND	R-08	0.02	0.06	"	"	"	"
Endosulfan sulfate	"	ND	R-08	0.02	0.06	"	"	"	"
Endrin	"	ND	R-08	0.02	0.06	"	"	"	"
Endrin aldehyde	"	ND	R-08	0.02	0.06	"	"	"	"
Heptachlor	"	ND	R-08	0.02	0.06	"	"	"	"
Heptachlor epoxide	"	ND	R-08	0.02	0.06	"	"	"	"
Methoxychlor	"	ND	R-08	0.02	0.06	"	"	"	"
4,4´-DDT	"	ND	R-08	0.02	0.06	"	"	"	"
4,4´-DDE	"	ND	R-08	0.02	0.06	"	"	"	"
4,4´-DDD	"	ND	R-08	0.02	0.06	"	"	"	"
Toxaphene	"	ND	R-08	0.06	1.50	"	"	"	"
alpha-Chlordane	"	ND	R-08	0.02	0.06	"	"	"	"
Endrin ketone	"	ND	R-08	0.02	0.06	"	"	"	"
gamma-Chlordane	"	ND	R-08	0.02	0.06	"	"	"	"
Kepone	"	ND	R-08	0.06	0.06	"	"	"	"
Mirex	"	ND	R-08	0.06	0.06	"	"	"	"
Surrogate: Tetrachloro-meta-xylene		*%*	*R-08, S-01*	*25.4-110*		"	"	"	"
Surrogate: Decachlorobiphenyl		*%*	*R-08, S-01*	*33.8-153*		"	"	"	"

Approved By

Basic Laboratory, Inc.
California ELAP Cert #1677 and #2718

basic laboratory
www.basiclab.com
2218 Railroad Avenue voice 530.243.7234
Redding, California 96001 fax 530.243.7494
3860 Morrow Lane, Suite F voice 530.894.8966
Chico, California 95928 fax 530.894.5143

Report To: NORTHSTAR ENGINEERING
111 MISSION RANCH BLVD SUITE 100
CHICO, CA 95926
Attention: NICK WEIGEL
Project: CACTUS CITY 11-150

Lab No: 1060765
Reported: 07/08/11
Phone: (530) 893-1600
P.O. #

Polychlorinated Byphenols (PCBs)

Analyte	Units	Results	Qualifier	MDL	RL	Method	Analyzed	Prepared	Batch
POND 1 COMPOSITE Sludge (1060765-04) Sampled:06/18/11 11:49 Received:06/20/11 08:04									
PCB-1260	mg/kg	ND	R-08	0.3	1.0	EPA 8082	06/29/11	06/23/11	B1F0662
PCB-1254	"	ND	R-08	0.4	1.0	"	"	"	"
PCB-1248	"	ND	R-08	0.4	1.0	"	"	"	"
PCB-1242	"	ND	R-08	0.4	1.0	"	"	"	"
PCB-1232	"	ND	R-08	0.4	1.0	"	"	"	"
PCB-1221	"	ND	R-08	0.4	1.0	"	"	"	"
PCB-1016	"	ND	R-08	0.4	1.0	"	"	"	"
Surrogate: Tetrachloro-meta-xylene	*%*		*R-08, S-01*	*25.4-110*		"	"	"	"
Surrogate: Decachlorobiphenyl	*%*		*R-08, S-01*	*33.8-153*		"	"	"	"

Approved By
Basic Laboratory, Inc.
California ELAP Cert #1677 and #2718

basic laboratory

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Phone: (530) 893-1600
P.O. #

Notes and Definitions

Z-01	An Insoluble spike and post spike were also performed and yeilded 92.2% and 108% respectively
S-01	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
R-08	The sample was diluted due to sample matrix resulting in elevated reporting limits.
QR-04	Duplicate results are within one reporting limit and pass all necessary QC criteria.
QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to the analyte concentration being greater than 4 times the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag). The J flag is equivalent to the DNQ Estimated Concentration flag.
I-06	Internal standard areas did not meet the minimum response criteria due to the matrix, which was confirmed by re-analysis.
I-03	Sample was received past the EPA recommended holding time.
D-09A	Result in the diesel organics range is partially due to overlap from a heavy oil range product.
D-02	Hydrocarbon pattern present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
<	Less than reporting limit
≤	Less than or equal to reporting limit
>	Greater than reporting limit
≥	Greater than or equal to reporting limit
MDL	Method Detection Limit
RL/ML	Minimum Level of Quantitation
MCL/AL	Maxium Contaminant Level/Action Level
mg/kg	Results reported as wet weight
TTLC	Total Threshold Limit Concentration
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leachate Procedure

Approved By
Basic Laboratory, Inc.
California ELAP Cert #1677 and #2718

BASIC LABORATORY CHAIN OF CUSTODY RECORD

2218 Railroad Avenue, Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494

LAB #: 10607165

CLIENT NAME: North Star Engineering

PROJECT NAME: Cactus City

PROJECT #: 11-150

PAGE 1 OF 1

MAILING ADDRESS: 111 Mission Ranch Blvd Suite 100 Chico CA 95926

REPORT DUE DATE: 7/5/11

TURN AROUND TIME: Standard (Rush)

OF SAMPLES: 4

ANALYSIS REQUESTED

MATRIX / TYPE: WW / Sludge

PROJECT MANAGER: Nick Weigel

CUSTODY SEAL INTACT? Yes No N/A

PHONE: 893-1600

EMAIL: NWeigel@Northstareng.com

SYSTEM #:

FAX:

RESULTS SENT: (Email) Fax EDD (Mail)

EDD TYPE:

INVOICE TO: North Star

PO#: 11-150

QC: Standard Level II

SAMPLE DATE	SAMPLE TIME	WATER	COMP	SOLID	SAMPLE LOCATION / IDENTIFICATION	NUMBER OF BOTTLES	%solids	pH, 8081, 8082, 8015, 8270	TKN, NO3, TP04, NH3	PCB	VOC, SVOC	TPH, Gas, BTEX, MtBE, Diesel	Chromium VI	CAM 17	NO2, NO3, TSS, COD, Alk	Hard, Ph, TVS, TKN, NH3, TDH	LAB ID	CHLORINE RESIDUAL OR COMMENTS
6/18/11	8:15	X	*		STATION 1/LIFT STATION	2									X	X	-1	
6/18/11	9:46	X			POND 2	2									X	X	-2	
6/18/11	9:54	X			POND 3	2									X	X	-3	
6/18/11	11:49		X		SW/SOUTHWEST	1	X	X	X	X	X	X	X	X				
6/18/11	11:56		X		SE/SOUTH EAST	1	X	X	X	X	X	X	X	X			-4	
6/18/11	12:22		X		NE/NORTHEAST	1	X	X	X	X	X	X	X	X				
6/18/11	12:41		X		NW/Northwest (Pond 1 composite)	1	X	X	X	X	X	X	X	X				

(Composite)

Client aware of hold times for pH, NO2, & NO3

HNO2

PRESERVED WITH: HNO_3 H_2SO_4 NaOH ZnAce/NaOH HCL NaThio OTHER

SAMPLED BY (PRINT)	SAMPLE DATE/TIME	RELINQUISHED BY:	DATE/TIME:
Justin Seufert/Nick Weigel	6/18/11		6/20/11
RECEIVED BY:	DATE/TIME:	RELINQUISHED BY:	DATE/TIME:
RECEIVED BY (LAB):	6/20/11 804	PROCESSED AND VERIFIED BY:	6/20/11 804
LOGGED IN BY:	6/20/11 804	CARRIER:	COOLER TEMPERATURE: °c

INSTRUCTIONS, TERMS AND CONDITIONS ON BACK.

SAMPLE TYPE: 1 = ROUTINE, 2 = REPEAT, 3 = REPLACEMENT, 4 = SPECIAL 5 = RAW

Appendix B

California Regional Water Quality Control Board
Colorado River Basin Region

Linda S. Adams
Secretary for
Environmental Protection

73-720 Fred Waring Drive, Suite 100, Palm Desert, California 92260
(760) 346-7491 • Fax (760) 341-6820
http://www.waterboards.ca.gov/coloradoriver

Arnold Schwarzenegger
Governor

March 25, 2008

Basem Muallem R.C.E.
Deputy District Director, Maintenance
Department of Transportation
464 W. 4th Street, 6th Floor
San Bernardino, CA 92401-1400

SUBJECT: CACTUS CITY REST STOP REVISED REPORT OF WASTE DISCHARGE, AND FORTHCOMING REVISED MONITORING AND REPORTING REQUIREMENTS, BOARD ORDER NO R7-2007-0051

In response to a meeting on October 19, 2007 between Regional Board staff and the Department of Transportation (Caltrans), Caltrans submitted a revised Report of Waste Discharge dated November 29, 2007 that included a schedule to line the sewage treatment ponds for the Cactus City Rest Stop located on Interstate 10, east of the City of Indio. In order to adopt revised waste discharge requirements, Regional Board staff must receive a final copy of the California Environmental Quality Act document prepared for this project. Please submit this document as soon as it is available.

A revised Monitoring and Reporting Program for the subject facility is enclosed. The monitoring frequencies have been reduced as requested by Caltrans.

If you have questions regarding this matter, please call Jon Rokke at (760) 776-8959.

for Jose Angel, P.E.

ROBERT PERDUE
Executive Officer

JR/tab

cc: Tim Wands, Caltrans

Enclosure: Monitoring and Reporting Program No, R7-2007-0051, Revision 1

File: WDID No. 7A 33 0800 021, Cactus City Rest Stop, Board Order No R7-2007-0051

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. R7-2007-0051, REVISION 1
FOR
CALIFORNIA DEPARTMENT OF TRANSPORTATION, OWNER/OPERATOR
CACTUS CITY REST AREA NORTH/SOUTH
WASTEWATER TREATMENT FACILTIY
East of Indio– Riverside County

Location of Discharge: Near the Center of E 1/2 of Section 5, T6S, R10E, SBB&M

MONITORING

1. The collection, preservation and holding times of all samples shall be in accordance with United States Environmental Protection Agency (USEPA) approved procedures. Unless otherwise approved by the Regional Water Board Executive Officer, all analyses shall be conducted by a laboratory certified by the State Department of Health Services. All analyses shall be conducted in accordance with the latest edition of *Guidelines Establishing Test Procedures for Analysis of Pollutants* (40CFR Part 136), promulgated by the USEPA.

2. Samples shall be collected at the location specified in Waste Discharge Requirements (WDRs), and in this Program. If no location is specified, sampling shall be conducted at the most representative sampling point available.

3. These requirements are contingent upon facility upgrades being completed no later than December 2009.

EFFLUENT MONITORING

Effluent samples shall be representative of the volume and nature of the discharge, and collected immediately prior to discharge to disposal ponds. The time of sample collection shall be recorded. At a minimum, effluent shall be monitored for the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow	Gpd[1]	Estimate	Weekly	Monthly
Total Suspended Solids	mg/L[2]	Grab	Monthly	Monthly
20° C BOD_5	mg/L	Grab	Monthly	Monthly
Settleable Solids	mg/L	Grab	Monthly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
pH	pH units	Grab	Monthly	Monthly
VOCs	ug/L[3]	Grab	Quarterly	Quarterly

1 Gallons per day
2 Milligrams per liter
3 Micrograms per liter.

DISPOSAL POND MONITORING

Permanent markers shall be placed in the disposal pond with calibrations indicating water level at design capacity and available operational freeboard. In addition, the Discharger shall inspect the condition of the pond at least once every fourteen (14) days, and record visual observations in a bound logbook. At a minimum, the condition of the disposal pond shall be monitored for the following:

a. the occurrence and location of weeds growing in the liquid or along the bank;
b. the occurrence and location of dead algae, vegetation, scum, or debris accumulating on the pond surface;
c. the occurrence and location of burrowing animals or insects; and
d. the general color of the pond.

A copy of the log entries shall be submitted with the corresponding monthly monitoring report, and remedial action taken, or scheduled to be taken (if any). At a minimum, grab samples from the disposal ponds shall be monitored for the following:

Constituent	Unit	Type of Sample	Sampling Frequency	Reporting Frequency
Dissolved Oxygen[1]	mg/L	Grab	Monthly	Monthly
pH	pH Units	Grab	Monthly	Monthly
Freeboard	Feet	Observation	Monthly	Monthly
[1] Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet, and analyzed for Dissolved Oxygen. Samples shall be collected between 8:00 and 9:00 A.M.				

WATER SUPPLY TO THE REST AREA

At a minimum, the water supply to the rest area shall be monitored for the following:

Constituents	Units	Sampling Frequency	Reporting Frequency
Standard Minerals[1]	mg/l	Annually	Annually
pH	pH units	Quarterly	Quarterly
[1] At a minimum, Standard Minerals shall include: total dissolved solids, calcium, chloride, fluoride, iron, magnesium, manganese, nitrate, potassium, sodium, sulfate, barium, total alkalinity (including alkalinity series), and hardness.			

SEPTIC TANK MONITORING

The septic tanks shall be inspected at least annually, and pumped when appropriate. The dates, and nature of inspections and maintenance, shall be described in the monitoring reports.

SLUDGE MONITORING

Annually, the Discharger shall submit a description of present and proposed sludge disposal methods, and report the total amount of sludge disposed of for that calendar year. If multiple disposal methods are used, designate the percentage of sludge disposed of by method:

1. For **landfill disposal**, include:
   a. Board Order Number for landfill(s) used;
   b. classification of landfill(s), and
   c. name and location of landfill(s) receiving sludge.

2. For **land application**, include:
   a. location of land application site(s);
   b. Board Order Number for land application site(s);
   c. a technical report analyzing application rates and procedures pursuant to the Department of Health Services' *Manual of Good Practices for Landspreading of Sewage Sludge*, and EPA's *Process Design Manual for Land Application of Municipal Sludges*, and Title 23, California Code of Regulations, Section 2511(f); and
   d. subsequent land use.

3. For **incineration**, include:
   a. name and location of sludge incineration site(s);
   b. Board Order Number for incineration site(s);
   c. disposal method for ash, and
   d. name and location of facility(s) receiving ash.

4. For **composting**, include:
   a. location of composting site(s), and
   b. Board Order Number for composting site(s).

REPORTING

1. The discharger shall arrange the data in tabular form so that the specified information is readily discernible. The data shall be summarized in a manner that clearly illustrates whether the facility is operating in compliance with WDRs. Where appropriate, the Discharger shall include supporting calculations (e.g., monthly averages).

2. Records of monitoring information shall include:
   a. date, exact place, and time of sampling or measurement(s);
   b. individual performing the sampling or measurement(s);
   c. date analyses were performed;
   d. individual performing the analyses;
   e. analytical techniques or method used; and
   f. result of analyses.

3. The result of any analysis taken more frequently than required at the locations specified in this Monitoring and Reporting Program shall be reported to the Regional Board.

4. Monitoring reports shall be certified under penalty of perjury to be true and correct, and shall contain the required information at the frequency designated by this Monitoring and Reporting Program.

5. Each report shall contain the following statement:

   "I declare under the penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations".

6. The Monitoring and Reporting Program and other information requested by the Regional Board shall be signed by a principal executive officer or ranking elected official.

7. A duly authorized representative of the discharger may sign the documents provided:
   a. authorization is made in writing by the person described above;
   b. authorization specifies an individual or person responsible for the overall operation of the regulated disposal system; and
   c. written authorization is submitted to the Regional Board Executive Officer.

8. Reporting a failure at the facility (wastewater treatment plant, or collection and disposal system) shall be as described in Provision No. 20. The result of any analysis performed due to a facility failure shall be provided within ten (10) days of sample collection.

9. The Discharger shall attach a cover letter to the Self Monitoring Report that clearly identifies and describes waste discharge requirements violated (if any), and corrective actions taken, or a time schedule for corrective actions planned.

10. Daily, weekly and monthly monitoring reports shall be submitted to the Regional Board by the 15th day of the following month. Quarterly monitoring reports shall be submitted by January 15th, April 15th, July 15th, and October 15th, of each year. Annual monitoring reports shall be submitted by January 15th of each year.

11. The Discharger shall submit monitoring reports to:

California Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260

Ordered by: for Jose Angel, P.E.

ROBERT PERDUE
Executive Officer

March 24, 2008
Date

Appendix C

DEPARTMENT OF TRANSPORTATION
Office of Electrical, Mechanical, Water
& Wastewater Engineering
Structure Design Services & Earthquake Engineering
Division of Engineering Services
P. O. Box 968041 MS9-3-11H
Sacramento, CA 95816-8041
Phone (916) 227-8526
Fax (916) 227-8157

Flex your power!

Be energy efficient!

May 27, 2011

Ms. Jennie Snyder, P.E.
Senior Engineer
California Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260

Subject: Cactus City Safety Roadside Rest Area (SRRA)
(Order No.: R7-2007-0051)

Dear Jennie,

The California Department of Transportation is planning to install an advanced sewer treatment system in Cactus City SRRA pursuant to the requirements of your subject Order. Please find enclosed an updated engineer's report and 95% complete plans for your review.

The proposed constructed wetlands sewage treatment system is an innovative design developed with the assistance of George Tchobanoglous and Harold Leverenz at University of California at Davis. Pilot testing of this treatment system at UC Davis has shown that it will achieve tertiary treatment. The Department's goal in future facility upgrades is to recycle this wastewater for irrigation purposes.

As we discussed on our recent teleconference, no water bodies are located near the facility and groundwater is approximately 540 feet below ground. Cactus City SRRA is also in an isolated area where there is no residential area nearby. Based on these factors, the Department does not believe that there is justification for establishing nitrogen removal requirements for this facility. Please let us know your effluent standards for this project and any other comments on this facility design.

The final design submittal (draft plans, specifications and estimates) for this project to our procurement unit is planned for late July 2011. Advertisement and the start of construction are anticipated in the spring of 2012. Your comments on the enclosed documents are requested by mid to late June of 2011.

Please inform us of any fees for updating the Department's Order.

Please contact me at (916) 227-8526 or Kosha Shah, project engineer, at (916) 227-8572.

Sincerely,

Jerry Marcotte
Senior Sanitary Engineer
Water and Wastewater Branch

cc;

Ray Desselle, Sr. Landscape Architect
Tim Wands, Landscape Architect
Doug Wylie, RWQCB Sr. Engineer

Engineer's Report on Proposed Onsite Wastewater Treatment System for Cactus City Safety Roadside Rest Area (SRRA)

By:
Jerry Marcotte, P.E., Kosha Shah, Transportation Engineer

The following report has been prepared to support a request for an amendment to Caltrans Waste Discharge Requirements for the onsite wastewater treatment system at the Cactus City Safety Roadside Rest Area (SRRA).

1. BACKGROUND

The Cactus City SRRA is located on Route 10 about 14 miles east of the City of Indio, as shown on Figure 1. The surrounding area is dominated by mountainous land formations.

Figure 1

Plan view of Cactus City SRRA and surrounding area (33.678N, 115.964W)

The proposed Cactus City SRRA wastewater management system is a unique treatment solution promoting sustainability to achieve 21st century innovative advanced wastewater technology.

2. HYDROGEOLOGY

The following hydrogeology report is based on data from several government agencies as well as measurements and data files provided by Caltrans.

Type(s) of soil present
The Cactus City SRRA is located within the Transverse Range geomorphic region of California. It is comprised of an active alluvial plain on which sediment from adjacent hills and mountains is deposited. These materials consist of fine to coarse sand with a large amount of cobbles and boulders.

Depth to first-encountered groundwater
There are no domestic wells in the vicinity of the rest area. However, the County of Riverside issued an Environmental Assessment Number 39364 for a development project called Paradise Valley that is just east of Cactus City SRRA. This document states under Section 9: Liquefaction Potential Zone, Finding Fact, "Groundwater depths at the western edge of the basin near Cactus City SRRA have been reported at depths of 540 feet below ground surface."

Direction of groundwater
Based on the topographical ranges in the area, the groundwater appears to be flowing in a southward direction.

Existing surface water quality
The water supply for the rest area is sourced from the Colorado River Aqueduct, located about a mile north. Samples were obtained from the drinking fountain. The water quality analysis was conducted by Western Analytical Laboratories, Inc, Chino, CA, on October 2008. The TDS sample result was obtained from Metropolitan Water District dated November 24, 2008. The results of the analysis are presented in Table 1.

Table 1: Cactus City SRRA source water quality

Parameter	Unit	Value
Total Coliform		Absent
TDS	mg /L	758
Nitrate	mg /L	2.0
Nitrite	mg /L	0.33

Distances from existing or proposed water wells in the vicinity
No other working wells were identified in the vicinity of the Cactus City SRRA based on the results of a search conducted using the SWRCB geotracker website.

3. WASTEWATER TREATMENT AND DISPERSAL SYSTEM

The information presented below is based on preliminary water quality data and previous discussions with the staff of the RWQCB. Note that wastewater from the Cactus City SRRA consists primarily of toilet and urinal flush water. Table 2 provides information on the concentrations of BOD, nitrogen, and other constituents.

Design flow
The predicted average and peak flow from the Cactus City SRRA is 5,000 and 10,000 gal/d, respectively.

Description of the treatment system

A flow diagram for the treatment system designed for wastewater management at the Cactus City SRRA is shown on Figure 2. As shown, the system incorporates a 10,000 gal, three compartment septic tank at each side, for primary treatment of the entire SRRA flow.

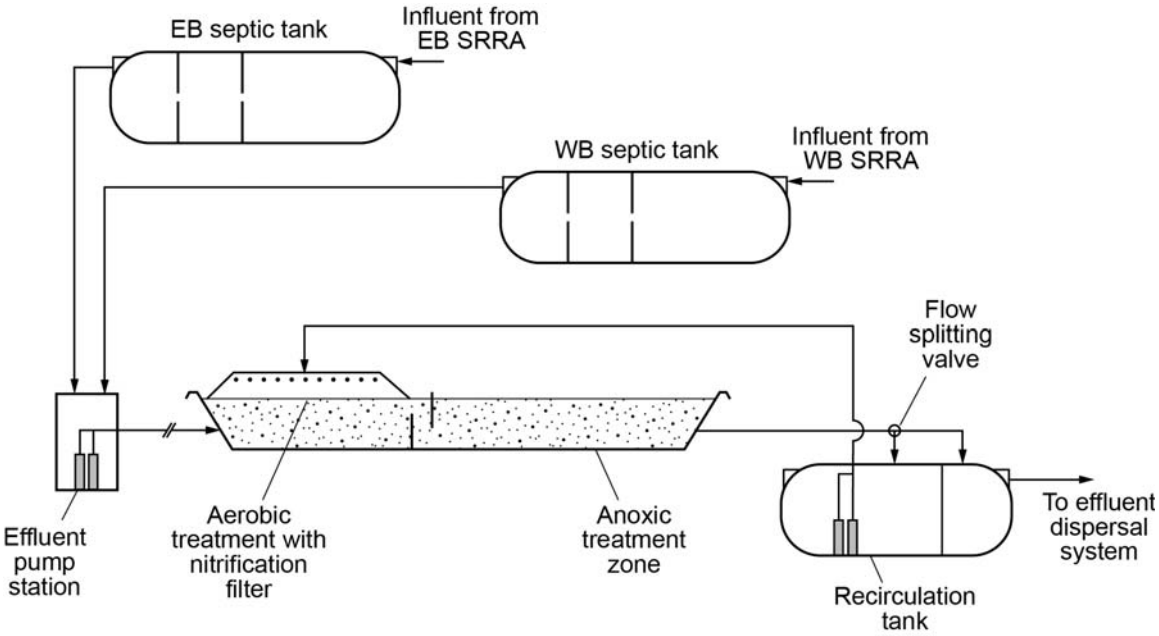

Figure 2
Flow diagram for the Cactus City SRRA comfort station wastewater treatment process

The total treatment system area is 7,175 ft^2, with a media depth from 3 ft to 3.5 ft. The treatment system is lined with a high density polyethylene (HPDE) liner. In the treatment system, a limestone nitrification mound is used for nitrogen conversion in a flow from the recirculation tank. Partial denitrification will occur through blending of the nitrified effluent from recirculation tank with raw septic tank effluent in the inlet zone to the treatment system. The inlet zone media will be a clean washed crushed rock with an effective size of ¾ to 1-1/2 inch. Following the preliminary blending and treatment in the inlet zone, the effluent is treated using a submerged woodchip packed bed filter for denitrification. The reduced loading rate and limestone mound, are examples of design feature used to maximize nitrification in the wetland.

The initial recirculation ratio is expected to range from 3 to 5, but will be adjusted following start-up for optimum performance. Duplex pumps and water level transducers in the recirculation tank are used to ensure redundancy and to alert maintenance staff in the event of a pump failure or high effluent event. As an additional precaution, high level and low level alarm float switches are located in the recirculation tank.

Projected effluent quality from treatment system

Influent constituent concentrations are based on the measured septic tank effluent concentration at similar Caltrans SRRA systems. The projected effluent quality will require a start up time period until the biological treatment processes acclimate and stabilize. The ranges of constituent concentrations expected in the effluent following process acclimation are reported in Table 2. It is anticipated that 2 to 4 months may be required for establishment of nitrification and, therefore, high levels of nitrogen removal. Initial BOD concentrations from the wetland will be increased as excess carbon leaches from the organic matter. Note that nearly all BOD will be removed in the wetland. Over time, the BOD concentration in the effluent are expected to stabilize at the values given in Table 2.

Table 2 – Wastewater constituent concentrations at the Cactus City SRRA

Parameter	Unit	Septic tank effluent[a]	Effluent
BOD	mg/L	300	<30
COD	mg/L	500	<60
TKN	mg N/L	230	~50
TN	mg N/L	230	~50
pH	unitless	7.5	~7
TDS	mg/L	1000	Minimal increase
TSS	mg/L	75	<10

[a] Expected effluent based on other Caltrans rest areas

Proposed dispersal system

Following treatment, the treated wastewater effluent is pumped to leachfield. Leachfield will utilize pressurized infiltration chambers and an automatic distribution valve. The average soil loading rate will be based upon gallons per square feet as identified in Appendix K of the California plumbing code.

Dispersal system contingency plan

Wastewater operators will regularly be onsite to monitor the operation of the wastewater system.An area has been identified and reserved for installation of a new leachfield if needed in the future.

Project timeline

Construction is expected to begin the April of 2012 with a completion date projected for Fall of 2012. It is expected that the system will be placed on-line around September 2012.